

Study on the impact of administrative division management on the regional economy—From the perspective of 281 prefecture-level cities

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Abstract. Merging counties into districts has significant implications for optimizing administrative structures, enhancing regional governance efficiency, and promoting socio-economic development. By incorporating the experiences of previous studies and summarizing corresponding advantages and disadvantages, we utilized data from 1999 to 2018. Employing a double-difference model, we constructed an index system covering economic, employment, ecological, and other aspects. We selected 22 indicators from 281 cities to assess the high-quality development level at the city scale. Based on whether the policy of merging counties into districts was implemented, we divided all samples into treatment and control groups to delve into the economic impact of administrative division adjustment policies. The study empirically demonstrates that the policy of merging counties into districts has a significantly positive impact on economic development in the regions where this policy is implemented. We found that administrative division management can have a positive impact on the economy, and this result has been verified, passing the significance test.

Keywords: Abolishing counties to establish districts, administrative division management, 281 prefecture-level cities.

1. Introduction

As China's urbanization process advances to promote economic development, the government continually restructures administrative divisions to improve urban layouts. This restructuring has undergone decades of evolution. Alongside the comprehensive deepening of reforms and the maturation of the market economy, timely adjustments in administrative divisions have become a significant breakthrough in driving economic and social development [1]. Administrative divisions serve as the fundamental units for the state's local administrative management. Adjustments in administrative divisions relate to the grassroots social governance system and spatial governance capacity. They are integral parts and crucial levers in modernizing the national governance system and capacity, exerting long-term influences on economic development and regional governance [2]. There are primarily three ways for administrative division adjustments: abolishing counties to establish districts (referring to the abolition of counties belonging to prefecture-level cities and establishing county-level cities), abolishing counties to establish cities, and reorganizing district boundaries. The focal point of this study, however, is abolishing counties to establish districts. As an essential means to advance urbanization, this primarily involves transforming counties (county-level cities) with relatively high development permissions under prefecture-level cities into urban districts, swiftly transitioning from 'agricultural counties/cities' to 'urban districts' in the short term. [3] Abolishing counties to establish districts in China serves as a crucial measure to break down administrative trade barriers between regions. It can promote resource rationalization by enhancing market integration, facilitating free flow of factors, and industrial transfers, thereby improving production efficiency.

Therefore, we researched the issue of merging counties into districts holds significant implications for optimizing administrative structures, enhancing regional governance efficiency, and promoting socio-economic development. Utilizing a double-difference model with data spanning from 1999 to

2018, this study empirically demonstrates that the merger of counties into districts has a substantial positive impact on economic development in the regions where the policy is implemented.

2. Review of Literature

Academic research has delved into the effects of county-to-district conversions on urbanization, economic development, total factor productivity, imbalances in urbanization development, government tax revenue, and green, low-carbon development at the county level. Cai et al.(2022) utilizing county-to-district conversion data, employed the PSM-DID method for policy assessment and concluded that the urbanization effects resulting from county-to-district conversions had no significant impact on the regional total factor productivity [4]. Zhan and Zeng (2021), indicated a notable enhancement in the economic development quality of the prefecture-level cities following county-to-district conversions [5]. Yang et al.(2020) , suggested that county-to-district conversions effectively mitigated imbalances in urbanization development, with more pronounced effects observed at the prefecture level [6]. Ji and Zou (2019), argued that after controlling for economic growth variables, the reform of county-to-district conversions significantly reduced the tax revenue of prefecture-level cities. Among the various taxes, corporate income tax revenue showed the most significant decline [7]. Kuang et al.(2021) indicated that after county-to-district conversions, the integrity of regional ecosystems was preserved, and local governments' ecological governance capacity was strengthened [8]. Zhang and Zhong(2023), through quantitative models, explored the impact of administrative division adjustments on green, low-carbon development at the county level. They found that county-to-district reforms significantly increased county-level carbon emissions, causing an increase of approximately 0.202 units [9].

As our country transitions from high-speed development to high-quality development, Wei and Li (2018) constructed an economic high-quality development measurement system covering ten aspects: optimized economic structure, innovation-driven development, efficient resource allocation, improved market mechanisms, stable economic growth, regional coordination and sharing, quality products and services, sound infrastructure, ecological civilization, and the beneficial effects of economic achievements on the people [10]. Meanwhile, Li et al. (2019), focusing on the two main aspects of 'the people's pursuit of a better life' and 'unbalanced and inadequate development,' established a high-quality development evaluation index system consisting of 27 indicators across five categories: economic vitality, innovation efficiency, green development, people's livelihood, and social harmony [11].

Previous researchers have rarely studied the effects of upgrading counties to prefecture-level cities on economic development from the perspective of the municipal level.

3. The basic funamental of the research

3.1. The model Construction of the research

This study focuses on 281 prefecture-level cities in China from 1999 to 2018. To investigate the impact of county-to-district conversions on economic development, the samples are divided into two groups based on whether the county-to-district conversion policy was implemented. The prefecture-level cities where the policy was implemented constitute the treatment group, while the remaining cities where the policy was not implemented form the control group. This division is treated as a 'quasi-natural experiment,' employing a Difference-in-Differences (DID) model to examine the net effect of county-to-district conversions on economic development. The baseline model is set as follows:

$$CE_{ijt} = \alpha_0 + \alpha_1 Treat_{ij} \times Time_{ijt} + \eta X_{ijt} + \mu_{ij} + \gamma_t + \varepsilon_{ijt} \quad (1)$$

The equation consists of various components: CE_{ijt} represents the economic condition of industry j in region i at time t ...; $Treat_{ij}$ represents a binary variable indicating whether the policy was implemented: if region i in industry j experienced county-to-district conversion during the study period, $Treat_{ij}$ takes the value of 1; otherwise, it is 0. $Treat_{ij}$ represents the timing of policy implementation: if region i in industry j experienced the policy in year t , the value is 1 for the year of policy implementation and subsequent years, and 0 otherwise. $Treat_{ij} \times Treat_{ij}$ represents the interaction term between the two, forming a policy binary variable and acting as the core explanatory variable. The coefficient α_1 measures the impact of whether and when the policy was implemented on the region's economic development, serving as the primary observed coefficient in the model. α_0 represents the constant term, X_{ijt} represents the set of control variables, μ_{ij} and γ_t denote region and time fixed effects, respectively, and ε_{ijt} stands for the disturbance term.

To further examine whether the treatment and control groups exhibited a common trend in economic development before and after the policy impact, the following model is constructed:

$$CE_{ijt} = \alpha_0 + \sum_{k=-10, k \neq -1}^5 \alpha_k Treat_{ij} \times D_{ijt}^k + \eta X_{ijt} + \mu_{ij} + \gamma_t + \varepsilon_{ijt} \quad (2)$$

D_{ijt}^k is a dummy variable, following the approach outlined in Beck et al. (2010), assuming that city i takes a value of 1 in the k -th year after the policy shock, with all other years as 0 (if $k < 0$, it represents the $|k|$ -th year before the policy shock). In specific regression analysis, $k=0$, representing the year when the policy is implemented, is considered as the base year. Observing the magnitude and significance of the parameter α_k enables the examination of temporal changes in the policy effect.

3.2. The indicator selection and data sources of the research

(1) Dependent Variable: This study selects the regional GDP of 281 prefecture-level cities in China as the dependent variable to measure the economic development level of each region.

(2) Core Explanatory Variable: The core explanatory variable in this study is the policy dummy variable for county-to-district conversions ($Treat_{ij} \times Treat_{ij}$), representing the interaction between whether and when the policy was implemented. The primary information sources are the China City Statistical Yearbook, China Statistical Yearbook, and local statistical yearbooks.

(3) Control Variables: Drawing from relevant literature, the chosen variables include the proportion of the secondary industry value added to GDP, non-agricultural population, year-end urban employed personnel in urban units, average number of staff in post, and comprehensive utilization rate of industrial solid waste. These variables are sourced from the China City Statistical Yearbook and local statistical yearbooks.

4. Results

4.1. Baseline Regression

Following the confirmation of the parallel trends test, a baseline regression is conducted. Firstly, regression analysis is performed using only the core explanatory variable (did) and the dependent variable (GDP). Secondly, the regression results include both the core explanatory variable and control variables. Subsequently, after integrating the core explanatory variable and control variables, the coefficient for 'did' stands at 0.072, significantly positive at the 1% significance level, indicating that the policy variable is significant. In other words, it suggests that the net effect of the county-to-district conversion policy on Gross Domestic Product (GDP) is captured.

The proportion of the secondary industry value added to GDP, non-agricultural population, year-end urban employed personnel in urban units, and average number of staff in post exhibit positive significance at the 5% level, demonstrating the impact of industrial structure, urbanization level, and openness of the economy on GDP. However, the comprehensive utilization rate of industrial solid

waste shows less significance, perhaps indicating that its influence on GDP in the current phase of high-quality development is not as pronounced, or it might be due to some cities not having statistically reported comprehensive utilization rates of industrial solid waste in the past decade or not giving it sufficient attention. In summary, the overall effect suggests a significant improvement in urban economic levels after the implementation of the county-to-district conversion policy. Specific results are presented in Table 1.

Table 1. Coefficient of policy implementation

y	Coefficient	t	[95% conf.	Interval]
	Std. err.			
did	0.74*	1.80	-0.07	1.54
	(0.41)			
X1	-0.15***	-10.15	-0.18	-0.12
	(0.02)			
X8	0.0006**	1.99	9.18	0.001
	(0.0003)			
X19	4.77***	71.44	4.64	4.90
	(6.68)			
X20	0.13***	25.12	0.12	0.14
	(0.01)			
X21	-0.002	-0.28	-0.01	0.01
	(0.005)			

4.2. Parallel Trends Test

The essence of the parallel trends test lies in insignificance mostly observed before the policy and significance after its implementation. This signifies that the examination validates the suitability of studying the impact of the county-to-district conversion policy on urban economies. The implementation of this policy has potential effects, and cities may anticipate the policy in advance, leading to corresponding adjustments in their regions and markets. Policy effect is shown in Figure 1.

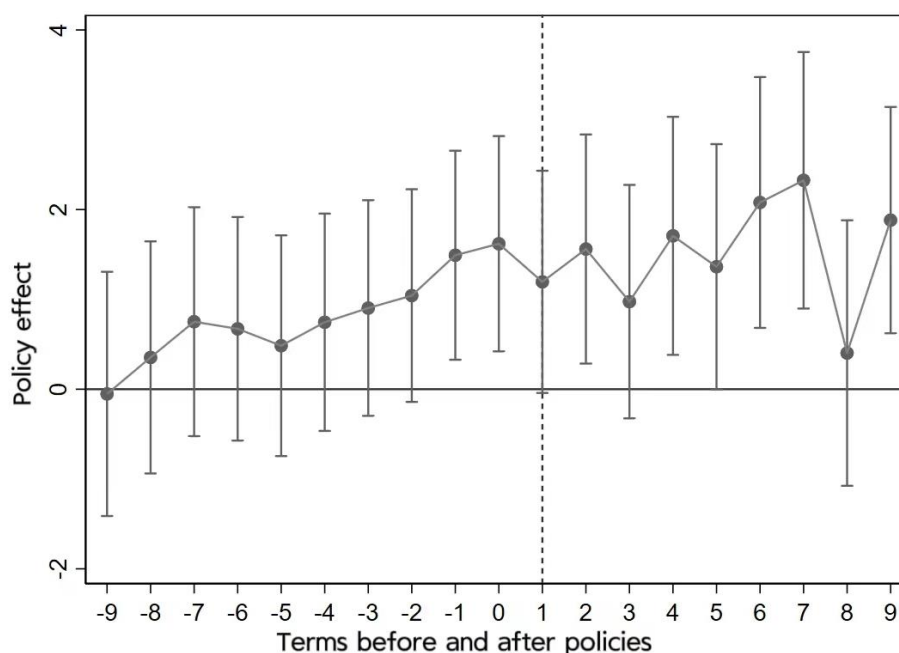


Figure 1. Policy effect

4.3. Robustness Check

Acknowledging that the results of this study might be influenced by unobservable factors, an additional placebo test is conducted on the model. In this test, the interaction term of the randomly assigned treatment group and 'did' is included in the original equation and the process is repeated 500 times.

By observing the coefficient distribution plot, it's evident that the coefficients of the random sampling converge around zero, with most of the estimated coefficients (depicted in blue) clustering near zero, resembling a normal distribution. The true regression coefficients significantly fall outside the interval $(-1, 1)$, indicating that the placebo test has been successful. This confirms the robustness of the regression model. The placebo test result is shown in Figure 2.

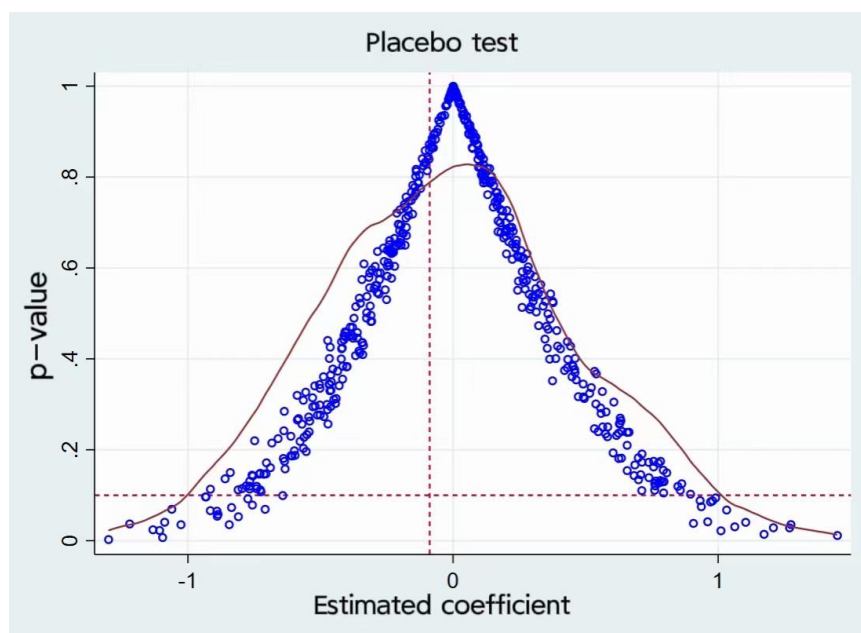


Figure 2. The placebo test result

5. Conclusion

County-to-district conversion refers to the transformation of the original county-level administrative divisions into corresponding prefecture-level administrative divisions. It's led by governmental authorities and is one of the significant means by which the government optimizes spatial resource allocation. The primary objective of this administrative adjustment is to meet the needs of economic development and social changes while enhancing administrative efficiency and the level of public services. Post-district adjustments have positively impacted the economic uplift of the original provincial areas. They significantly drive the economic development of newly established cities.

This study utilizes regional GDP data from 281 prefecture-level cities in China spanning from 1999 to 2018 as the dependent variable. Employing a double-difference model (DID), we examine the net effects of the policy of merging counties into prefecture-level cities on regional economic development. The final conclusion is verified and passes the significance test. The research finding confirms that the policy of merging counties into prefecture-level cities has a significantly positive impact on regional economic development in the implemented regions.

The role of county-to-district conversion manifests in several key aspects:

1. **Enhancing Administrative Efficiency:** This conversion reduces administrative levels, simplifies administrative systems, minimizes communication costs between administrative institutions, enhances decision-making flexibility and responsiveness. It improves public service levels, optimizes resource allocation, and thus promotes comprehensive economic and social development.

2. Driving Regional Development: This conversion prompts local governments to focus more on and pay attention to the economic development of the region. Adjustments in district divisions lead to increased government investment in infrastructure, driving consumption and production. This, in turn, stimulates the economic development of the city and nearby areas, enhancing overall regional competitiveness. To some extent, it promotes increased employment and economic development, accelerating economic growth post-policy implementation. Additionally, upgrading counties to prefecture-level cities can increase government investment and enhance the level of public services.

3. Industrial and Employment Adjustment: The conversion potentially reduces the role of the primary industry, i.e., agriculture, leading to land utilization for urban construction or infrastructure. This reduces agricultural land, prompting some farmers to transition to other industries, joining the secondary or tertiary sectors in urban areas. The development of the secondary and tertiary industries, i.e., manufacturing and services, is consequently elevated, fostering urbanization and attracting rural labor forces into employment within these sectors.

4. Population and Resource Integration: It facilitates better population regulation, significantly increasing the permanent population of the policy-affected urban areas. This population surge is not due to an increase in registered residents but due to the influx of migrant populations. It concentrates populations regionally, facilitating urban expansion. It aids in rational regional planning and utilization of resources, promoting balanced urban-rural development, enhancing resource efficiency, and fostering a shared economy.

5. The district adjustment from county-to-district aids in breaking down market segmentation and barriers between markets. This optimization enables better resource allocation, attracting mobile production factors to policy-affected regions. These mobile factors subsequently stimulate increased consumption and investment, enhancing the attractiveness of the policy-affected regions, boosting economic efficiency, and thereby fostering socio-economic development.

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